



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,349	02/23/2001	Brian Matthews	06618/590001/CIT3165	1267
20985	7590	04/17/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			JACKSON JR, JEROME	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**MAILED**

APR 17 2006

**GROUP 2800**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/933,349  
Filing Date: February 23, 2001  
Appellant(s): MATTHEWS ET AL.

---

John F. Conroy  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 11/04/05 and 1/25/06 appealing from the Office action mailed 5/31/05.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,092,036                      Hu et al                      3-1992

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 9 and 10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hu et al.

Hu teaches indium bumps for focal plane infrared sensing devices, similar to appellant, which have a higher height than previously capable in the prior art (6-9 microns in column 1 lines 37-42). The height of indium bumps in Hu is disclosed in column 2 lines 21-35 to be about 115 microns in height (75+20+20), for one example. Notwithstanding the inevitable compression of the bumps during cold welding, the claim is considered obvious over Hu because tall bumps are desired in the industry, as stated by both Hu and appellant, and thus any size greater than the 6-9 microns of the prior art to at least the 115 microns of Hu's embodiment must be considered at least obvious if not anticipated. There is clearly no unobviousness of 15-100 micron indium bump sizes as claimed, particularly when Hu teaches that 9 microns was the greatest height achievable at the time of his invention and Hu was able to make the bump sizes at least 115 microns. Any size from 9 microns to 115 must be considered anticipated or at least obvious over Hu absent any unexpected results. Applicant has not shown any unexpected results over Hu.

#### **(10) Response to Argument**

Appellant's arguments regarding the 115 micron height of the indium bump example in Hu as not anticipating the claimed 15-100 micron height are not fully convincing. The examiner will concede that 115 microns is larger than 100 microns, however a fair reading of Hu would lead one of ordinary skill to deduce that any bump size up to 115 microns would be anticipated by Hu as he seeks to make bumps larger than 9 microns.

Art Unit: 2815

This rejection also relies on the obviousness, to one of ordinary skill, of any bump height larger than the prior art (6-9 microns) to the “ultra-tall” bump heights (115 microns or greater) disclosed in Hu. A fair reading and understanding of Hu should lead one of ordinary skill to come to the conclusion that 10-115 micron height is anticipated by the problem solving strategy of Hu to build indium bumps larger than 6-9 microns, however, because an exact statement of anticipation of bumps 10-100 microns does not exist in Hu, the examiner will not forcefully argue anticipation, unless of course the Board comes to a different conclusion that anticipation is warranted by simple deduction that any height greater than 9 microns to the example of 115 microns is so inherent and obvious to the problem solving of Hu as to be basically anticipated. Appellant is reminded of *In re Sovish* 226 USPQ 771 where the court remarked on the impropriety of presuming “stupidity rather than skill” in the art.

In addition, appellant’s remarks regarding claim 5 that Hu includes “additional features” such as pads and mesas which might increase the spacing between the chip surfaces, are not convincing of patentability. First, the claim recites “regions adapted to forming electrical contacts” and “wherein the surfaces of the pixilated detector and the VLSO chip are separated by 15 to 100 microns”. The claim does not specify that pads or mesas are not part of the “regions adapted to forming electrical contacts”. Therefore pads and mesas in Hu can be considered such “regions” and an indium bump height of 10-115 microns is obvious as stated above.

On page 9 of the arguments appellant states that there is no reason to believe that Hu’s disclosure overlaps with the claimed range. This argument is not convincing.

Art Unit: 2815

As stated above, it must be concluded that bumps greater than 6-9 microns of Hu's admitted prior art to at least the example of 115 microns height are so obvious as to be basically anticipated or else there is no reason to believe that anyone has any skill in the art. Separation distances of 5-12 microns are disclosed by appellant in the specification to be the maximum obtainable by the prior art. As stated above, Hu states 6-9 microns to be the maximum obtainable by the prior art. Both appellant and Hu teach methods to make indium bumps larger than the prior art. Appellant wants the Board to believe that a bump size of 15-100 microns is not prima facie obvious over Hu's teachings of making a larger bump size (with respect to 6-9 microns) of 115 microns. The board is also reminded that on page 6 of the specification appellant teaches the "method is capable of producing a pattern of precisely arrayed features having a height of about 10 to about 200 microns". Appellant's arguments might have merit if there was some critical and unobvious feature of bump heights between 15 and 100 microns in contrast with 115 microns, however, with the disclosure that greater heights (200 microns) are also desirable and there not being any mention of criticality for 15-100 as opposed to 10-200 microns or any other range between the prior art (5-12 microns) and 200 microns, applicant's argument is unpersuasive. Appellant is merely stating that Hu is not anticipating or obvious because he does not explicitly state appellant's range. Hu should be read in the context of one of ordinary skill wherein bump heights of 9-115 microns are prima facie obvious if not anticipated by Hu.

Appellant on page 9 argues that Hu may teach indium bumps even larger than 115 microns. This argument is true and further reinforces the obviousness of applicant's

Art Unit: 2815

invention. Larger bumps than the prior art are desired. The largest bumps obtainable are apparently the best as they reduce the capacitance and noise by separating the detector and readout chips as far as possible as disclosed by appellant on pages 7 and 8 of the specification. Hu discloses making larger bumps for reducing expansion and contraction stress problems during temperature cycling of the detector and readout chip. For either reason the largest bumps are apparently most desirable and smaller bumps are still obvious.

Appellant argues that the height of the connectors (bumps) is an important consideration in both Hu and appellant's invention. Precisely true as stated above. Appellant argues that Hu should have different "compliances and capacitances than those within the claimed ranges". First, there are no compliances and capacitances in the claims. No magnitudes of capacitance are claimed and what "compliance" in the claims is appellant referring to ? Secondly, the 15-100 micron indium bump height is considered obvious or anticipated so any associated "compliance or capacitance" must also be anticipated or obvious by inherency.

Finally appellant states that Hu teaches away from the invention. It is admitted that if one of ordinary skill would not consider the claimed bump height to be anticipated or obvious then one might as well consider Hu to teach away. Clearly as appellant states Hu wants the tallest bump heights attainable. Nevertheless, smaller heights are obvious if not the most desirable. There is no teaching away or no express disclosure that 10-115 microns is to be avoided in Hu.

Art Unit: 2815

In regard to appellant's "other issues" where appellant states that Graham v. John Deere standards should be applied, the examiner is hoping that one of ordinary skill is considered to be able to read and understand the problems solved by Hu and that bumps greater than the prior art size of 6-9 microns to about 100 microns are prima facie obvious over the teachings and suggestions of Hu.

In regard to the claims clearly excluding indium bumps having a height of 200 microns, it is again reiterated that the specification teaches that 200 microns are desirable. The claims do not recite 200 microns. Nevertheless 15-100 micron bump size is obvious over the simple teachings and suggestions of Hu to one of ordinary skill. In addition, the original specification and claims state "about 100 microns". Nowhere in the original disclosure is the exact language "100 microns". The language "100 microns" rather than "about 100 microns" was not denied entry as new matter into the claims because applicant had additional disclosure that the bumps could be as large as 200 microns. Nevertheless applicant has not shown any criticality of the specific 15-100 micron range with respect to the 15-200 micron range of applicant or 9-115 micron range of Hu. For this reason also the claims are considered anticipated or at least obvious over Hu.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

jj

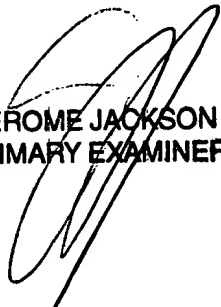
Conferees:



Art Unit: 2815

*Kenneth Parker* 

Darren Schuberg 

  
JEROME JACKSON  
PRIMARY EXAMINER

JEROME JACKSON  
PRIMARY EXAMINER